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FY-66 Quarterly Report No. 3

25X1

PAR 243

28 Feb 66

SUBJECT: Briefing Print Enlarger (Prototype)

TASK/PROBLEM

1. Design, fabricate, and test a prototype briefing print enlarger based upon tests and observations of the breadboard equipment developed on the combined PAR 202/224.

DISCUSSION

2. This PAR was approved by TWX 6097 from the customer dated 13 Dec 65.

3. In the authorization, there were various directives for desired changes from the breadboard model design. These have in some degree changed the design approach to the prototype enlarger from that described in the contractor's 5 November proposal. A revised proposal is being prepared incorporating these and other changes as prototype design studies and breadboard tests proceed.

4. Tests on the breadboard equipment are in progress. Design concept studies for revision of the lamphouse design, lens interchange mechanism design, and the photometer arrangement (to provide spot photometry at the easel) are continuing.

5. The tests being conducted on the breadboard equipment are to measure performance of the various lenses in red, green, and blue light. As was expected from the calculated data for the design of the 40X to 60X black-and-white lens, this lens is not suitable for color printing. The 40X to 60X color lens is less satisfactory for black-and-white printing than its counterpart, primarily because of the smaller aperture and the resulting diffraction limitation. Since the requirement for 40X or higher magnification of color material is expected to be limited, the black-and-white 40X to 60X lens will be used on the prototype.

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25X1 6. There is no commercially available easel photometer which can read easel illuminance with a 3mm aperture at the easel with the color filters used in the breadboard enlarger lamphouse. The basic response sensitivity of the EP1000 photometer appears adequate, provided all the energy reaching the 3mm aperture at the enlarger easel can be placed on the photomultiplier cathode. This is a straightforward optical engineering problem, but it will require a photometer with some special components. The design and fabrication of the required special photometer will probably be subcontracted.

7. In a visit by the customer's representatives on 7 and 8 Feb 66, the customer stated that his needs for polycontrast paper prints could be met if PC filters 1, 2, and 3 could be used in conjunction with the planned tungsten lamp. It was agreed that the filters should be made readily interchangeable to facilitate changing from normal to polycontrast filters. A practical system for filter interchange using filters protected by a metal rim has been developed in the lamphouse design study.

8. Design studies to simplify fabrication and improve functioning of the lamphouse and the objective lens interchange are in progress.

PLANNED ACTIVITY

9. Effort will be continued in the following areas:

- a. Lens tests and other tests on the breadboard enlarger.
- b. Design studies on the lamphouse and lens interchange system.

Specifications will be written and discussed with the potential subcontractor of the special photometer.

10. A revised proposal will be submitted to incorporate the changes directed in the TWX authorization and in the 7 and 8 February conference, and changes which resulted from tests and operation of the breadboard model.

11. A tentative specification will be presented for review of format. Some of the necessary data are not yet available for submitting a specification in final form.

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